Chadwick (Jas. R.)

PALPATION IN OBSTETRICS

AS PRACTISED IN GERMANY.

PALPATION IN OBSTETRICS

AS PRACTISED IN GERMANY.

By James R. Chadwick, M.D. Harv., Boston.

Attention has of late been called to the abdominal examination and manipulation of the pregnant woman as performed in Germany, and more especially in Vienna. An attempt to state in detail the method there employed, and to consider some of its effects upon obstetric teaching and practice, may not be out of place.

The subject is one which is almost ignored in American and English textbooks, and is but imperfectly taught in the German treatises. The Vienna School probably makes more of this method than any other, but, unfortunately, the works of the Professors, Carl Braun and Joseph Spaeth, are so old, that the views of the writers have in many respects changed since these were published, and the books cannot, therefore, be regarded as reliable exponents of the authors' opinions at the present day.

From the verbal teachings of the various professors must therefore be drawn the inspiration which should guide the pen of one who ventures to detail the procedure followed, and the results claimed for this method of practice. That the latter are very great and essentially practical, I would insist upon from the outset, as proved to me from personal observation in the clinics of Vienna and Würzburg. Direct application has been made to the above-mentioned professors and to their assistants, to have all dubious points in their teachings settled.

In thus laying before his professional brethren in America the details and advantages of a comparatively unappreciated subject, the writer will readily be pardoned if he recounts, *in extenso*, the steps to be taken and the inferences to be drawn in all circumstances. That the promised results are not to be gained by an inexperienced hand, must be realized, from the outset, by such as may make a practical use of the following pages. Let those who choose to test the value of this method, not condemn it, if they cannot leave the first or even the twentieth bedside, with "Veni, vidi, vici" upon their lips.

Abdominal examination consists in *inspection, percussion, auscultation and palpation.*

Inspection of the abdomen informs us as to its volume and form; the tension of its walls—the discoloration and scars upon its integument—the changes of the umbilicus—the impediment to respiration, and condition of the ribs; sometimes shows us the movements of the child or of flatus—the twitching of the abdominal muscles—and occasionally a thrill from pulsation of the aorta.

Percussion informs us as to the consistence of the contents of the abdomen, giving the size and height of the womb, as well as, imperfectly, the nature of its contents, the presence of ascites, flatus, or a full bladder.

"The object of *auscultation* is to recognize the fœtal heart-sounds, and the maternal vascular murmurs, and to distinguish them from the transmitted heart-sounds of the mother—from the spontaneous movements of the fœtus—from the umbilical murmur—from the gurgling of gases, and the splashing of fluids in the intestines—and from the aortal pulse." [C. Braun.]

I shall confine myself to this brief definition of the scope of these first three divisions, in regard to which American practice does not materially differ from the German, and shall proceed at once to the subject of this paper—

Palpation, in its two-fold Application to Diagnosis and Treatment.

For the purposes of diagnosis, palpation is the determination of the volume, consistence, form and position of the uterus—the size, position, presenting part and spontaneous movements of the fœtus—the presence of more than one fœtus, or of complicating abdominal or pelvic tumors—the

life of the fœtus—the transmitted thrill of the aortal pulse—the fulness of the urinary bladder—the presence of ascites, and, in some measure, the question of a previous birth, by the *sense of touch through the abdominal walls.*

Preliminaries.—The woman, to be examined, should be flat upon her back on a bed; her legs should be drawn up, and her head supported, in order to relax the abdominal muscles and integuments. Corsets, drawers, and all constricting bands about the abdomen or chest should be removed. A sheet should cover the lower extremities, and the night-dress or chemise be drawn up under her breasts, thus leaving the abdomen alone exposed. Should modesty require, the sheet, being the cleaner and looser of the two, may be brought up over the abdomen, though this will interfere, somewhat, with a satisfactory examination. The physician's hands should be warm.

Manual of Palpation.—Standing upon the right of the woman, the physician lays his hands upon her abdomen, and proceeds to explore its contents, as revealed to the touch. This is performed by moving the hands, step by step (so to speak), over its surface, while they are rounded over the inequalities, made prominent by pressure, so as to form an idea of the configuration of what is within. This is best effected by a general "pawing" motion, during which the hands are kept nearly flat upon the abdomen, the pressure upon which is not constant in any one spot, for a rocking motion is imparted to the hands by alternate flexion and extension of the wrist and of the metacarpo-phalangeal articulations. The hands are, during this action, either moved along side by side in the same region of the abdominal surface, or at opposite sides of the abdomen; then the one steadies the uterus and fœtus, while the other studies their angles and form. The latter course is most useful, when the abdominal contents are very movable.

When it is wished to test the consistence or mobility (including ballottement) of the underlying parts, the very tips of the fingers of one hand should, *first*, be placed gently upon the abdominal integument, almost perpendicular to it, and *then*, by a forcible thrust downwards, be brought up against the parts below. As this should be a shove rather than a blow, it may best be executed by an action from the elbow, with stiff but slightly-flexed wrist and hands. In order to examine the presenting part of the fœtus, two other procedures are commonly followed. In the first, the right hand of the investigator, with thumb abducted, is laid, palm downwards, upon the abdomen immediately above the symphysis pubis, the thumb being near the middle of the left Poupart's ligament, and the fingers at the same point on the other side; the ring and middle finger come chiefly into play. The thumb and fingers are then thrust downwards into the abdomen, and approximated, until they grasp between them the presenting part of the fœtus. The distinguishing characteristics, of a presenting head or breech, may best be brought out by giving the part a sort of shake, with loosely grasping hands, by which it is tossed to and fro between the thumb and fingers.

The second method, of palpating the presenting part, is by laying the two hands flat upon the opposite sides of the abdomen, the points of the fingers being directed toward and lying just above the middle of Poupart's ligaments on each side; they are then thrust downwards and inwards towards the cavity of the pelvis, until they come upon and hold between them the presenting part. This method is rarely resorted to, unless the previous one yields an ambiguous or negative result. The examiner is by it enabled to explore deeper in the pelvis, and thus often reach a deep-seated head, which would not be accessible to the former procedure.

No force, sufficient to cause the woman any real pain, need ever be employed during these manipulations.

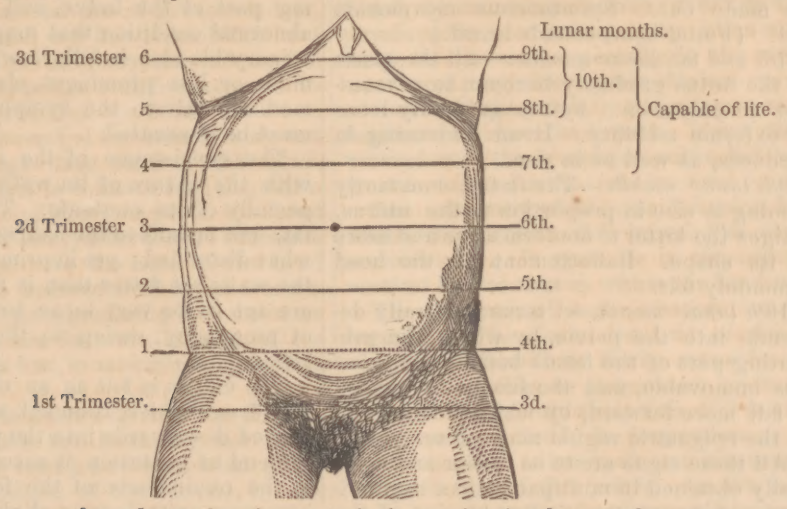
Attention to the minutiæ enumerated above is of importance, for a promiscuous punching will not only subject the woman to much discomfort and pain, but will also excite reflex contractions of the abdominal or uterine muscles, and thus defeat the object in view.

At the Bedside.—While facing the woman, the obstetrician lays his hands, with the fingers directed toward her head, upon the opposite sides of her abdomen, to make sure that the long axis of the fœtus corresponds to the longitudinal axis of the uterus; in other words, that he has a longitudinal position before him. This proved, he proceeds to estimate the period of the pregnancy by defining the height to which the fundus uteri rises. This may be done by depressing, as far as possible, the ulnar border of the left hand above the fundus, and measuring, while it is closely applied to the latter and in a perpendicular position, its distance from certain fixed points. The right hand should be occupied in supporting the body of the uterus, should it incline

to fall away from the median line of the body.

The Period of the Pregnancy is determined chiefly from the height of the fundus, which depends, in the later months, almost entirely upon the size of the fœtus. The measurement of the abdominal circumference gives no data, as proved by Hecker, Spiegelberg and Richelot, who, for example, found, for the tenth month of pregnancy, variations of 88–116 cm. (H.), 84–108 cm. (S.) and 82–113 cm. (R.).

In transverse and twin pregnancies, this manner of diagnosticating the period gives untrustworthy results, for then the long axis of the uterus will be the transverse, and, in consequence, the fundus will not attain to the same altitude. The general size of the child or children, the size and hardness of the head or heads, and the testimony derivable from the vaginal examination, and from the statements of the mother, must then be relied upon.



The following are the rules to be observed in making the calculation.

The line connecting the symphysis pubis to the ensiform cartilage is supposed to be crossed, at right angles, by six equidistant transverse lines; two intersecting each of the spaces from the pubes to the umbilicus, and from the umbilicus to the tip of the ensiform cartilage, and one passing through each of the last two points.

The normal term of gestation, 280 days (reckoned from the commencement of the last menstruation), is then divided into ten lunar months; these, exclusive of the tenth month, are arranged in trimesters. During the first trimester the fundus uteri is rising to the level of the pelvic brim, and is not accessible to palpation; at the end of the second trimester it has reached the height of the umbilicus, and at the end of the third that of the ensiform cartilage. The altitude attained by the fundus at the end of the several months of each trimester corresponds to the other lines of the scale.

The distance between each of these lines is about equal to the breadth of two fingers, whence the common saying that the fundus stands "two fingers above the symphysis pubis, two fingers below the navel," &c., indicating the end of the fourth and the fifth lunar months respectively, and so on.

During the tenth lunar month, the uterus is generally supposed to be settling into the pelvis; therefore, although it has been increasing in size, the fundus has really been sinking from its position at the end of the ninth month. This descent is, however, far from constant, and should not be allowed for, until further abdominal and vaginal examination has confirmed the supposition. A complete descent of the uterus would, consequently, carry the fundus, in the course of the tenth lunar month, through the various altitudes, through which it had passed in its ascent during the ninth, and bring it finally, at the end of the tenth, to the level at which it stood at the end of the eighth. This is exceptional, so that it is more correct to place the normal height of the fundus, at the end of the tenth month, somewhere *between* the lines corresponding to the end of the eighth and ninth months, with the proviso that the fundus will not infrequently be found as high as the line of the ninth month.

In estimating the period of pregnancy, no mention has, thus far, been made of the

other less reliable, but not unimportant, data to be obtained from palpation. These will be more fully described in other connections later, and will here be only mentioned as they successively appear in the several months.

4th lunar month.—The uterus is felt as a rounded, elastic tumor, above the symphysis pubis, and continued into the pelvis; its consistency is soft, and in multipara often uneven. It may be a little harder in several places adjoining the fœtal parts, but the latter are not distinctly felt. Ballottement through the abdominal walls is very rare.

5th lunar month.—Uterus a little to one side of the median line, generally to the right. Spontaneous movement of the fœtus, and abdominal ballottement rarely felt. (Fœtal heart-sounds, in rare cases, heard on auscultation.)

6th lunar month.—Fœtal parts, and, consequently, the presentation can commonly be made out. Spontaneous movements felt. (Fœtal heart-sounds heard.)

7th and 8th lunar months.—All the parts of the fœtus gradually become more manifest to palpation. Fœtus gradually loses its extreme mobility. Head increasing in hardness, as well as in size.

9th lunar month.—The fœtus, constantly gaining in size in proportion to the uterus, obliges the latter to conform more and more to its shape. Ballottement of the head commonly felt.

10th lunar month.—Uterus generally descends into the pelvis, by which the presenting part of the fœtus becomes more or less immovable, and the fundus is caused to fall more forward, by which a flattening of the epigastric region may ensue.

All these signs are to be earlier and more easily obtained in multiparæ than in primiparæ, owing to the greater tension of the abdominal walls in the latter. The fœtus is, of course, supposed to be alive.

This method of determining the period of the pregnancy will be found, in general, satisfactory, despite its manifest imperfections. Three points are important in applying it, however:—that the fœtus should not be in a transverse position; that the fundus should be in the middle line of the body; and that the bladder should be empty; it being evident that a dilatation of the uterus in a transverse direction would shorten its vertical axis, that any deflection of the womb from the median line of the body would lessen its apparent height, and that a full bladder might prevent the uterus from sinking to its proper level in the pelvis.

Fulness of the rectum is said to affect, in some measure, the height of the fundus uteri, but is rarely taken into account. The thickness of the abdominal walls is also to be considered and allowed for; it is determined by taking up a fold between the thumb and fingers. This gives another indication, for it has been proved that the amount of adipose tissue in the walls decreases with each successive pregnancy.

Deformity of the pelvis, of the vertical column, or of the thorax, an unusual amount of amniotic fluid, and the presence of complicating tumors may lead us astray, unless such conditions are discovered and allowed for.

Having thus settled, preliminarily, the duration of the pregnancy, subject, however, to modification or correction after the vaginal examination, the physician proceeds to diagnosticate the position and presenting part of the fœtus, and to detect any abnormal condition that may exist. If the urinary bladder is full, it will be felt as a more or less prominent, elastic tumor, immediately above the symphysis pubis, and must be evacuated.

The consistence of the abdomen varies with the nature of its walls, and more especially of its contents. The walls, when fat, will be soft to the feel, even when somewhat distended; yet in primiparæ, in whom the walls are fatter than in multiparæ, they are apt to be very tense towards the end of pregnancy, owing to the unusual dilatation.

The uterus is felt as an elastic, more or less firm bladder, rounded above and prolonged downwards into the pelvis. Toward the end of gestation, it assumes more nearly the ovoid form of the fœtus; it never, however, quite loses a slight antero-posterior groove in its fundus, the last trace of its formation by the union of Müller's ducts; this is more marked during a contraction. Its shape when pregnant (and uncontracting), or dilated from other cause, is acknowledged to be chiefly dependent upon its contents. Up to the seventh or eighth lunar months the uterus is so distended by the proportionately great amount of liquor amnii, that the fœtus floats free of its walls, and does not mar the symmetry of its rounded outline. After that time, however, the relation of the fœtus to the fluid is gradually reversed, and the uterus assumes, in a measure, the form given it by the fœtus.

Peculiarities of the Fœtal Parts.—The two great extremities of the fœtus, as it lies doubled up in the uterus, are the head and the breech; they are recognized by their individual peculiarities, and by the rounded terminal character common to both.

The head is felt as a round, hard body, entirely free from angles or even prominences, more movable than the breech, and more or less isolated (because of the hollow at the neck) from the neighboring resistant points. When the head is freely movable, one of its chief distinctive features is its *ballottement*, or quick rebound upon the exploring fingers, after a sudden push. The sensation imparted to the hand, in this case, is peculiar and characteristic, being such as is caused by a hard ball floating in a liquid. Its rebound is quicker and more bouncing than that of the breech—which alone could resemble it—because it swings from the body by the flexible neck, and thus describes the arc of a small circle only, whereas the breech, when thus propelled, describes an arc of greater radius, and is restrained by the inflexibility and greater inertia of the body, as well as the more extended surface which it exposes to the resistant action of the fluid; for these reasons the rebound of the breech is slower and less sudden than that of the head. This peculiar feel is enhanced by the different consistence of the two parts, the head being hard and bony, whereas the breech is soft and fleshy. As the size of the head increases, this ballottement is less marked, but as its bones gradually become more ossified, with the increase in size of the fœtus, what is lost in mobility is gained in hardness.

The breech is known by its being directly continuous with the back, by not being symmetrically round but somewhat pointed (the tuberosities of the ischia), by not being hard, and by not rebounding suddenly upon the fingers after a blow (ballottement).

The back is recognized by the long, uninterrupted resistant surface it presents to palpation. It is said that the spinous processes of the vertebræ can, in some instances, be felt; if so, the occurrence must be of extreme rarity.

The small extremities—the legs and arms—are generally detected as small, irregularly shaped bodies, easily pushed about by the hands, often spontaneously changing their positions, and frequently dealing blows to the hand of the observer.

The momentary application of cold to the abdomen is said to increase these spontaneous movements of the fœtus; it is inconceivable that the cold itself should penetrate to the fœtus and excite the unwonted activity, especially if we are to believe Hebra's statement, made in my hearing, that a thermometer, placed between the teeth and cheek, is not sensibly affected by the continued application of ice to the cheek externally; that the reflex nervous current, which might be excited in the woman, in such a case, could have an effect upon her uterus, and thus indirectly produce an impression upon the fœtus, is within the bounds of reason, though improbable. I have had no opportunity of verifying the truth of this assertion as to the application of cold.

At the Bedside.—Having first established the longitudinal or transverse position of the fœtus, and the period of the pregnancy, the next step is to decide upon the presentation which we may have before us.

Longitudinal Positions.—The *head* is first to be sought for, and will commonly be found, by suitable palpation, over the symphysis pubis; not unfrequently, it lies somewhat to one side, especially in the earlier months of pregnancy, when it is less crowded down into the pelvis by the pressure of the fundus uteri upon the breech. If not discoverered over the symphisis pubis, the head must be located in the vicinity of the fundus.

One extremity of the ovoid having been found, the other, the breech, is to be searched for. It must lie in the opposite vertical half to that in which the head lies.

The presenting part, whether head or breech, may be above the brim of the pelvis, where it will be freely movable, and easily accessible to palpation; or it may have descended into the pelvis, and become more or less fixed, in proportion to the depth to which it has sunk, and its size relatively to that of the pelvis. In the latter case, the presenting head *may* still be reached by palpation, or often the neck only, which can be recognized by its appearing, when grasped, too small to be either the head or the breech. The bimanual method of examining the presenting part may, in cases of "deep-seated head," be resorted to with success. When the breech has descended into the pelvis, the part seized by the hand is not small, but, consisting, as it does, of the body and perhaps the legs, it is as large and may even be larger than the breech itself. Bimanual palpation will here only confirm the deep seat of the breech.

The remaining regions of the abdomen are then to be explored to determine in which direction the *back* is turned, and in

which quarter the small extremities lie. The *back* is commonly directed either to the right or the left side of the mother, and may be recognized rather by the greater resistance, imparted by it to the lateral half of the abdomen in which it is located, than by its long, resistant surface being absolutely felt, though this last may often happen.

In the opposite, lateral half of the abdomen, the limbs are to be sought for, both by deep pressure, and by a passive laying on of the hands.

Transverse Positions.—In these the *head* and *breech* are first to be distinguished from each other as they lie in the opposite lateral segments of the abdomen.

The *back* and *limbs* are then felt for, with a view to determining whether the former is turned more to the front, or more to the back of the mother. No presenting parts will be detected, an arm or a leg being too small to be appreciable by palpation. All these signs of the position of the fœtus may not be elucidated in every case, but enough will almost invariably be made out to enable us to decide upon the presentations and positions, recognized in the classification adopted. The examiner should not, however, be satisfied until he has tried, at least, to obtain each of the data given above.

Before giving the classification, I must apologize for substituting the English term "presentation" for the exact translation of the German word "lage," which would be "position." This is all the more to be deplored, for "position" [lage] seems (though I have been unable to verify the fact) to have been specially chosen, because of the importance accorded in Germany to external examination, in which the presenting part plays but a subordinate role. The danger of being misunderstood, from the use of the term "position" in a more restricted sense in English and American treatises, seems to justify this change. As no two schools in Germany have the same classification, that used in Vienna will be given, because, in my opinion, it is the simplest and best.

The 3d and 4th occipital presentations, of English and American authors, are designated as abnormal "rotations" of the other two occipital presentations.

After the vaginal examination, in breech presentations, more exactitude is sometimes gained by accepting knee and foot presentations, as subdivisions of the first; very little stress is, however, laid upon this point, as it is devoid of all practical worth.

(The German names are added, to aid such as may occasionally refer to German text-books.)

Classification of Presentations and Positions of the Vienna School.

I.—Longitudinal Presentations.
[Längenlage.]

- Head. (Kopflage.)
  - Occipital. (Schädellage.)
    - 1st. Back toward left side. (Rücken nach links.)
    - 2d. Back toward right side. (Rücken nach rechts.)
  - Face. (Gesichtslage.)
    - 1st. Back toward left side. (Rücken nach links.)
    - 2d. Back toward right side. (Rücken nach rechts.)
- Breech. (Steisslage.)
  - 1st. Back toward left side. (Rücken nach links.)
  - 2d. Back toward right side. (Rücken nach rechts.)

Oblique presentations (schieflage) always change into longitudinal or transverse.

II.—Transverse Presentations.
[Querlage.]

- 1st. Head in left side. (Kopf links.)
  - 1st Position (Stellung) | Back forwards. (Rücken nach vorne.)
  - 2d Position (Stellung) | Back backwards. (Rücken nach hinten.)
- 2d. Head in right side. (Kopf rechts.)
  - 1st Position (Stellung) | Back forwards. (Rücken nach vorne.)
  - 2d Position (Stellung) | Back backwards. (Rücken nach hinten.)

It will be observed that this classification and nomenclature are the direct result of the prominence given, in Germany, to the external examination, as all the different presentations and positions can be determined, *exclusively*, from the data thus furnished. From this are the diagnoses made, and then later confirmed, made doubtful, or, in rare cases, refuted by the vaginal examination. The division is extremely simple, and has been proved to give all the indications of real importance in practice.

Before reviewing the signs yielded by palpation, in each of the presentations and positions, I must briefly refer to the assist-

ance furnished, in this respect, by another mode of examination.

Auscultation of the Fœtal Heart.—This may be performed, with the ear applied to the integument of the abdomen, through the medium of a sheet, or, better still, by means of a stethoscope, because this instrument may be applied to any part of the abdomen, without necessitating a constrained posture, or a congested head, on the part of the auscultator; it is open to only one objection, that the woman's abdomen must be laid bare.

It has been proved that the fœtal heart-sounds are, almost invariably, best heard through the back of the fœtus, hence at that part of the abdominal surface of the woman beneath which the back lies. This is based upon the fact that the back is generally forced, by the motions of the fœtal extremities, into immediate apposition with the uterine walls, hence the distance through the back to the auscultator's ear is less than through the breast; moreover, a considerable layer of fluid is apt to intervene between the breast and the uterine walls, a condition peculiarly unfavorable to the transmission of sound.

This rule has but one recognized exception, though, of course, unusual circumstances may render it unreliable. In face presentations, from the unnatural position of the head, the occiput being pushed back upon the vertebral column, the dorsum of the fœtus is separated from the uterine walls on that side, and the breast is thrust forward against them on the other, thus reversing the ordinary condition of things. Here the heart-sounds will best be heard in that region of the abdomen nearest to the breast of the fœtus. In all other presentations, the spot at which the fœtal heart-sounds are heard with the greatest distinctness, will always guide us to the position of the back. If the back of the fœtus is directed toward the back of the mother, the heart-sounds will be but faintly audible, if at all. During contractions of the uterus, the fœtal heart-sounds are never heard.

It will now be seen how auscultation of the fœtal heart-sounds will confirm or refute the data, furnished by palpation, as to the lay of the back.

Signs Obtained in each of the Presentations and Positions through Palpation and Auscultation. 1*st Occipital.*—Head over the pubes. Breech in fundus uteri. Back in left side of abdomen, small extremities in right. Fœtal heart-sounds in left lower segment of abdomen.

2*d Occipital.*—Head and breech as above. Back and fœtal heart-sounds in right side, small extremities in left.

1*st Face.*—Head over pubes, somewhat to left. Breech in fundus somewhat to left. Small extremities in right side, also fœtal heart-sounds.

2*d Face.*—Head over pubes, somewhat to right. Breech in fundus, somewhat to right. Small extremities and fœtal heart-sounds in left side.

Oblique are merely divergencies from one or another of the occipital or transverse presentation, hence the signs will be but modifications of those found in these presentations.

1*st Breech.*—Breech over pubes. Head in fundus uteri. Back in left side of abdomen, small extremities in right.

2*d Breech.*—Breech and head as above. Back in right side, small extremities in left.

1*st Transverse.*—Head in left side, breech in right.

1*st Position.*—Back forwards. Small extremities backwards. Heart-sounds heard.

2*d Position.*—Back backwards. Small extremities forwards. Heart-sounds not heard, or but very faintly.

2*d Transverse.*—Head in right side, breech in left.

1*st Position* as in first transverse.

2*d Position* as in first transverse.

The Diagnosis of Twins is, in general, very uncertain, and, in primiparæ, rarely successful. A depression running across the abdomen is rather the exception than the rule, and, even if present, is not conclusive. Up to the tenth lunar month, the two fœtuses are so movable that they yield but few data on which to base a diagnosis. During the tenth lunar month the following signs, if satisfactorily made out, will justify us in pronouncing in favor of twins, yet there is no condition in midwifery which so frequently baffles the skill of the most experienced obstetricians as this.

1st. The recognition, by palpation, of several similar large fœtal parts (head or breech). Perhaps, while one is deep in the pelvis, two others may be felt through the abdomen.

2d. The recognition, by palpation, of numerous, small, movable, fœtal parts (legs and arms), or their spontaneous motions in several regions of the abdomen.

3d. The exact diagnosis, by palpation, of position of each fœtus.

4th. The immobility of the presenting part (as revealed by palpation and vaginal examination), especially after evacuation

of the liquor amnii, while the parts felt through the abdominal walls are very movable.

5th. The perception, by auscultation, of the fœtal heart-sounds at two opposite sides of the abdomen, while they are inaudible in the intervening space.

6th. A striking want of accord between the presenting part (as revealed by palpation and vaginal examination) and the place of the heart-sounds.

In general, an unusual size of the abdomen, a lateral distention of the uterus, the sensation, by the mother, of fœtal motions in many regions are signs of subordinate value, but should, at least, raise suspicions of a multiple pregnancy.

The Signs of Extra-uterine Pregnancy revealed to palpation vary so greatly in different cases, that scarcely any rule can be given for them. The chief peculiarity is the presence of two abdominal tumors, one being the fœtus with its enclosing cyst, in which, early in the pregnancy, movable, resistant parts may be felt, and later even the presentation, &c., of the fœtus be determined; the second tumor is the uterus, somewhat enlarged, but not so much so as the supposed duration of the pregnancy would require. Until the fœtal parts, or their motions, can be made out, or the fœtal heart-sounds can be heard, extra-uterine pregnancy cannot be diagnosticated, by external examination, from any other cystic tumor.

Complications of Pregnancy revealed by Palpation.

The Death of the Fœtus during pregnancy can never be recognized with certainty, but may be suspected from the following signs: the general flabbiness, and want of fixed shape of an abdomen, which had previously been firm and resistant, as well as difficulty in defining the outline of the uterus; the impossibility of feeling the spontaneous movements of the fœtus (very unreliable); the softness and non-resistance of the fœtal parts, and their remaining passively in any spot into which they are pushed; the non-ballottement and soft feel of the head.

Confirmatory evidence is derived from the fact that the fœtal heart sound, which have been audible to a skilled anscultator, can no longer be detected in any region of the abdomen. (The heart sounds are best heard when the back is directed forwards, and the limbs backwards and out of reach, and *vice versa*.)

The Size of the Fœtal Head relatively to that of the pelves. This, in all cases of narrow or deformed pelvis, is of the utmost importance as determining, whether the delivery should be left to the course of nature, or whether manual or instrumental interference is called for. The size and hardness of the head may be presumed from the general size of the fœtus, and estimated directly by palpation. The head can seldom be fairly grasped, and its dimensions arrived at, except when over the pubes, and even then, it requires long and constant practice, to enable its size to be calculated with any degree of accuracy.

Hydrocephalus is diagnosticated from the large size, and the abscence of the usual hardness, of the head, as well as from its remaining above the pelvic brim, in spite of strong uterine contractions, when previous easy births, or an exact measurement has established the normal dimensions of the pelvis.

Contractions of the uterus are plainly detected through the abdominal walls, and their character determined. The different conditions of inertia, atony, exhaustion, paralysis either general or partial, and tetanus, of the uterus during delivery, are thus recognized, and appropriately treated. Colicky pains, from contractions of the uterus before the full term, may be distinguished from other similar pains and proper means be taken to avert a threatening abortion or miscarriage.

Retroversion of the pregnant uterus is commonly first indicated by retention of urine, and colicky abdominal pains; on palpation the bladder will be detected, extending often as high as the umbilicus. The uterus will be out of reach.

Rupture of the uterus, during natural delivery, occurs, according to C. Braun, from the violence of the contractions, and is located, transversely, at the junction of neck and body. It can only be certainly diagnosticated from the vaginal examination, but may be suspected from the sudden cessation of pains, previously severe, from the great change in the position of the fœtus, and the retreat of the presenting part, from the recognition of the contracted uterus as a hard turner upon one side, and from the greater distinctness with which the fœtus having escaped into the peritoneal cavity, is felt. When the fœtus does not thus escape, the fundus uteri commonly falls to the opposite side to that in which the rupture has taken place, owing to the local paralysis of the latter. The abdomen becomes large, and fluids collect in its deep parts.

Tumors, such as fibroids, ovarian cysts, &c. The former will often mar the symmetry of the uterine contour, and may then be carelessly taken for the small extremities, or even a second fœtus; their persistence in one spot, in spite of manipulation, and their possible want of accord with the position of the fœtus will dispel the illusion. Ovarian cysts can generally be made out as distinct elastic tumors, separated from the uterus by a well-marked furrow.

Hindrances and Expedients.

Tension of the abdominal walls, when due simply to the unusual dilatation as often happens with primiparæ, may generally be overcome by attention to the details of examination, given in the early pages of this paper. Yet this condition will occasionally prove so obstinate as to render palpation fruitless. Percussion may then be resorted to.

Muscular contractions of the abdominal and uterine walls. The latter are involuntary and unavoidable, unless through the delicacy of the explorer's touch. The intervals between the spasms must then be made the most of. The abdominal muscles are, for the most part under the influence of the will, and should but rarely prove an obstacle to their examination. The woman's attention may often have to be distracted by conversation, or better still, she should be required to hold her mouth open, or to count in order to prevent her straining.

Hydramnios may cause such distension of the uterus as to interfere seriously with palpation. The uterus will then be large and symmetrical, even yielding fluctuation in extreme cases. The fœtus is freely movable, and ballottment easy. The fœtal heart sounds are weak or unheard. Too small an amount of liquor amnii, on the other hand, will allow the uterus to cling to the fœtus before the contractions, and enable a long and tedius first stage of labor to be foreseen.

Tenderness of the abdomen is rarely so great as to interfere, seriously, with careful palpation, through a circumscribed spot may be rendered so sensitive, from the continual kicking of a lively child, especially if it be against the ribs, as not to bear the least touch. Cases, of which I have seen one, occur occasionally, in which, at any time during the early months of pregnancy, an hyperæsthesia of the peritoneum is excited by spasms of the uterus; many of the local symptoms of a subacute peritonitis, such as pain, extreme tenderness on pressure, &c., are present, with entire absence of the constitutional disturbance, effusion and other diagnostic symptoms of such a condition. The true nature of the affection has never been satisfactorily shown, so far as I can learn. It is pleasant however to feel that this state will improve with time and treatment, and have no prejudicial effect upon the regular course of the pregnancy, provided abortion is, at the time, guarded against. Such a complication would evidently prevent all palpation, as might also a true circumscribed peritonitis, such as is caused by the bursting of the cyst in extra-uterine pregnancy.

Adipose tissue, when deposited, in great amount, in the abdominal walls, adds greatly to their thickness, and may thus form a serious hindrance to abdominal examination. No change occurs in the uterine walls from successive pregnancies, except a little unevenness of surface in some instances.

Ascites and Flatus may occur during pregnancy and prevent all access to the uterus through the abdomen. They are distinguished from each other by percussion and fluctuation. Graviditas nervosa is a form of the latter, which is often met with at the time of the grand climacteric and may then give rise to much doubt and distress.

Internal and External Examination combined.

Thus far external examination alone has occupied our attention, but we must not pass from the application of this to diagnosis without a few brief words upon the effect of its combination with the internal examination. This method is superfluous after the presenting part is fixed or but slightly movable. When, however, it is freely movable, or when the fœtus is too small to be made out by palpation alone, and again in complicated or obscure cases, this combination may be employed to great advantage. Before the uterus has risen above the brim of the pelvis, i. e. in the first three lunar months, a finger in the vagina and a hand upon the abdomen may hold between them the enlarged uterus, and from its size, growth, consistency, &c., distinguish it from other uterine as well as extra-uterine tumors. Soon after this period, the fœtus or its head may often be first recognized by its bouncing from one to the other of the hands, when thus held, and made to strike it.

Still later in the pregnancy, a hand upon the abdomen will often be required to bring down and retain the presenting part of the

fœtus within reach of the finger in the vagina. This is especially useful in oblique presentations, where the presenting part lies in one of the iliac regions, and may be pushed down into the pelvis by a hand applied outside of it. The same may be effected in many transverse presentations. In determining the size of the fœtal head, when presenting, this combined examination will be manifestly advantageous, for the head can then be held between the hands, and its dimensions estimated with tolerable accuracy by an experienced obstetrician.

As an assistance to vaginal examination, the left hand upon the abdomen is in such constant use in Germany that no student is ever allowed to omit it. It should not, then, be applied over the fundus uteri only, and made to press the fœtus down into the pelvis, but should be moved to various regions of the abdomen. When there is any tendency to what is called "hanging abdomen," the hand will be more efficacious when pushing upwards from immediately above the symphysis pubis. In the diagnosis of twins, some aid may be derived from noting whether a push, administered to the presenting part, is transmitted to the hand upon the fundus uteri and *vice versa*.

Palpation in its application to Treatment.

Version by external manipulation alone was first recommended by Wigand in 1807, and has given so much better results than the old method by internal manipulation, or the combined one more recently brought into notice by Braxton Hicks, as to be universally given the preference in Germany. The fact that, if unsuccessful, it is perfectly harmless, and in no wise prevents the other modes of version being resorted to, raises it above reproach. Wigand himself says, "we should never neglect to try it," and later generations but echo his opinion.

The theory of the operation is merely to aid nature in her attempt to bring the fœtus into the normal, i. e. longitudinal, position. It is, of course, derived from our observation of the many transverse positions that change, in the last months of pregnancy, into longitudinal, or are converted into such, by the uterine contractions, after labor has commenced.

The conditions most favorable to the operation are thin, flabby, non-sensitive abdominal and uterine walls, considerable liquor amnii, and not too large a fœtus; these render the fœtus accessible to manipulation and freely movable.

During contraction of the uterus, and, with very few exceptions, after rupture of the membranes, nothing can be effected by external treatment. The most suitable time is when the membranes are still intact, and the uterus makes quite long pauses between the contractions. A fully dilated os uteri is an advantage, for then, should version by external manipulation prove unsuccessful, and during the attempt the membranes be accidentally ruptured, version by internal manipulation may be undertaken, before the fœtus has become fixed by the hugging of the uterine walls. This dilatation of the os uteri should, however, not be waited for, because the liquor amnii may escape at any moment, and thus the golden opportunity be irretrievably lost.

As to the question whether any good results from version during the last few months of pregnancy, in fact at any time before labor has commenced, I can only say that in Vienna the operation is now *never* performed at such times; Professor Spaeth has, in my presence, repeatedly pronounced any version, undertaken before labor begins, as useless. Its advocates elsewhere admit that the change in position is rarely permanent, and in these instances the operation, in all probability, but forestalls the working of nature. The proper time is as soon as possible after the first pains are felt.

If, then, it is to be performed before the os uteri is dilated, and consequently before vaginal examination will yield reliable results as to the presentation, the importance and even necessity of basing the diagnosis upon the data furnished by external examination again asserts itself.

Manual of the Operation.—The advantage of having the woman upon the side in which the part to be brought down lies, and thus, by causing the fundus to fall to that side, directing the head towards the entrance to the pelvis, seems to me to be overbalanced by the difficulties of the manipulation, and, especially, the impossibility of properly applying the force; the tendency of the whole operation is, moreover, to bring the fundus uteri into this desirable situation. I have seen the operation several times performed in the dorsal decubitus, and am satisfied of its superiority. This applies to the complete cross presentation, and not to the oblique, where lateral decubitus alone, if properly chosen, will result in a longitudinal presentation of the fœtus.

Let the woman, therefore, be upon her back, and the physician upon that side of the bed in which the future presenting part

lies, for the force will then be most comfortably and efficiently applied. Either cephalic or pelvic version may be performed, the rule being to bring down into the pelvis that end of the fœtus which is nearest to it. If, however, the fœtus is so movable as to render either an easy task, the head is to be chosen, from the lesser mortality attending those presentations.

While facing the woman's feet, the obstetrician lays the palm of the farther hand above and outside of the part to be brought down, and endeavors to propel it in the direction of the entrance to the pelvis. With the other hand he is, at the same time, pushing and rubbing the opposite end of the fœtus toward the fundus uteri. Great force should never be applied, but manipulation and friction during the intervals between the contractions, and steady pressure during the contractions, to prevent the loss of ground already gained, will generally effect the desired result. An assistant to work over one large extremity, while the operator confines himself to the other, is often useful. An occasional pressure upon the lower end, in the direction of the long axis of the fœtus, to start it out of the hollow in which it lies, is advisable.

As the contractions of the uterus may, unaided, perform the version, we should never overlook the chance of success through their increased violence, due to the manipulations. It is even well at times to await the effect of these.

If the end of the fœtus approaches the pelvis, agreeably to our wishes, the pressure should be maintained, until we are satisfied that the part will remain in its new place, during the pauses as well as the contractions of the uterus. For this purpose, turning the woman upon the side, whence the presenting part has descended, is to be recommended. Should it even then not remain fixed in the pelvis, it must be held there, until the os uteri is sufficiently dilated to justify a rupture of the membranes; where *absolutely necessary*, this last may be done before the os is fully dilated, but ever with great circumspection. Pads and bandages, to keep the fœtus in place, are of little avail. The moment the presenting part is firmly engaged in the pelvis, the completion of the labor may be left to nature.

Two conditions will contraindicate this method of version, a narrow pelvis and necessity for a hasty completion of the delivery; in all other cases it should invariably be tried, provided the obstetrician is not called upon too late.

To prevent hæmorrhage, in cases of placenta prævia, many authorities consider that the leg serves as a better tampon than the head, and that podalic version should then be elected.

When the fœtus is dead, great difficulty may be experienced in turning thus, because of the want of firmness in the fœtus; as soon as this state is recognized, podalic version or decapitation may even be undertaken.

In a premature birth, the version by external manipulation will generally be easy, owing to the proportionally great amount liquor amnii.

Mattei and Hegar recommend the change of breech into head presentations, to which there can certainly be no objection, provided it can easily be accomplished.

In Germany it is never thought necessary to employ an anæsthetic during this operation.

Before leaving the subject of palpation in treatment, I might be charged with oversight, did I not mention the advantage of friction and manipulation to augment the intensity of weak uterine contractions, as well as the great acceleration to delivery, in cases of "hanging abdomen," from supporting, with the hands or a bandage, the fundus uteri, which, by its falling forwards, directs the presenting part against the promontory of the sacrum, and not into the entrance to the pelvis.

I will not farther emphasize the importance of palpation in obstetrics, but trust that the persual of these pages has made the theory appear rational, and will persuade others to give it a fair trial in practice.

In justification of the high value which I claim for my subject, I will append two or three opinions expressed by leading German obstetricians.

Naegele and Grenser say "this mode of investigation has a great value, and cannot be sufficiently recommended."

Schroeder, in the last edition of his treatise, expresses himself as follows: "For the small practitioner, the determination of the fœtal presentation from the external examination, under ordinary circumstances, allows less opportunity for error, than the internal, when it alone is undertaken. The first should never be omitted, since the results derived from the internal examination are subjected, through it, to the most admirable test."

Hegar of Freiburg goes even farther, and says, "If the attention of our women was called to the great advantage of this (external) examination, they would soon come to demand it. Pregnant women can be ex-

amined much oftener and by more persons externally than internally. The chief cause of the many fatal results after transverse positions is, I am perfectly convinced, that the external examination is placed in the second line, and far too great a value attributed to the vaginal examination in the instruction of students and midwives. In theory, the importance of palpation has long been recognized, but, in practice, it is too little used, and in the schools for midwives especially, too little stress is laid upon the fact that this method of examination is more important than the internal. Were this not so, then we should not be continually hearing of neglected transverse positions." Can testimony be stronger! What then are the chief advantages which have compelled so strong expressions of opinion, in favor of palpation in obstetrics?

1st. That, by it, the period of the pregnancy may be approximately estimated.

2nd. That the diagnosis of the fœtal presentations and positions may be made during the later months of the pregnancy and the first stage of labor, when internal examination yields very meagre results.

3d. That twins, extra-uterine pregnancy, the death of the fœtus, the size of the fœtal head, complicating tumors, and many other conditions may, by it, be recognized, long before the vaginal examination would reveal them.

4th. That the external examination may be made many times, and by many persons, without any risk of doing harm. On this account it recommends itself especially, for purposes of instruction.

In the way of treatment.

1st. That version can be performed by external manipulation with much greater chance of success than by the internal, and with this gain *to the mother* that the danger of inflammation and rupture of the uterine walls is reduced to a miminum, that in case of hæmorrhage or other threatening symptum, turning by external manipulation may be resorted to, if thought expedient, much earlier than the old method; and *to the child* that it thereby escapes the greater mortality attendent upon breech presentations.

The length of this paper bids me desist from considering the application of the combined method of treatment, and refer the reader to the able article by Braxton Hicks, published a few years since in the "Transactions of the London Obstetrical Society."

Vevey, Switzerland, July 15, 1872.